

C5.1 Units of measure

Name: _____ Class: _____ Date: _____ **Total: 20 marks**

KEY WORDS area 面积 • length 长度 • volume 体积

Objective

Use units of measure to solve Core IGCSE Mathematics problems.

You must be able to:

- Convert lengths, areas and volumes using the correct powers
- Convert litres, millilitres and cubic units
- Use consistent units before counting containers

1 Key knowledge and worked examples

■ **Key knowledge: Units of measure**

Length scales by the unit conversion factor; area scales by its square and volume by its cube. 1 m = 100 cm, so 1 m² = 10000 cm² and 1 m³ = 1000000 cm³. 1 litre = 1000 ml = 1000 cm³. Also 1 kg = 1000 g and 1 km = 1000 m. Keep units attached.

■ **Worked example: Units of measure**

length: x100	area: x10000	volume: x1000000
--------------	--------------	---------------------

Convert 0.035 m² to cm².

- There are two length dimensions: $A = 0.035(100)^2 = 350 \text{ cm}^2$.
- Convert 0.004 m³ to litres: $V = 0.004 \times 1000 = 4 \text{ litres}$.
- Convert 3750 g to kg: $m = 3750/1000 = 3.75 \text{ kg}$.

■ **Method check**

Area conversion squares the length factor and volume conversion cubes it. A factor for length cannot be reused unchanged for area or volume.

2 Practice

2.1 Convert 2.7 km to m and 48 mm to cm. [2]

2.2 Convert 6200 cm² to m². [2]

2.3 Convert 0.008 m³ to cm³. [2]

2.4 Convert 2.35 litres to ml and 4500 g to kg. [2]

3 Exam-style questions

3.1 Apply the units of measure methods below. Show working and include units where appropriate.

(a) A tank holds 0.075 m³. Convert this to litres. [2]

(b) Find the number of full 250 ml bottles it can fill. [2]

(c) A label has area 18 cm^2 . Convert this to mm^2 . [2]

3.2 A tank holds 0.024 m^3 of water. Water is poured into 750 ml bottles.

(a) Convert the capacity to litres and find how many full bottles it fills. [3]

(b) A label has area 0.015 m^2 . Convert this to cm^2 and explain why multiplying by 100 would be incorrect. [3]
